

# Q3

## Quarterly Market Review

Third Quarter 2018

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This report features world capital market performance and a timeline of events for the past quarter. It begins with a global overview, then features the returns of stock and bond asset classes in the US and international markets.

The report also illustrates the impact of globally diversified portfolios and features a quarterly topic.

## Overview:

Market Summary

World Stock Market Performance

World Asset Classes

US Stocks

International Developed Stocks

Emerging Markets Stocks

Select Country Performance

Select Currency Performance vs. US Dollar

Real Estate Investment Trusts (REITs)

Commodities







Fixed Income

Impact of Diversification

Quarterly Topic: Total Cost of Fund Ownership

# Market Summary

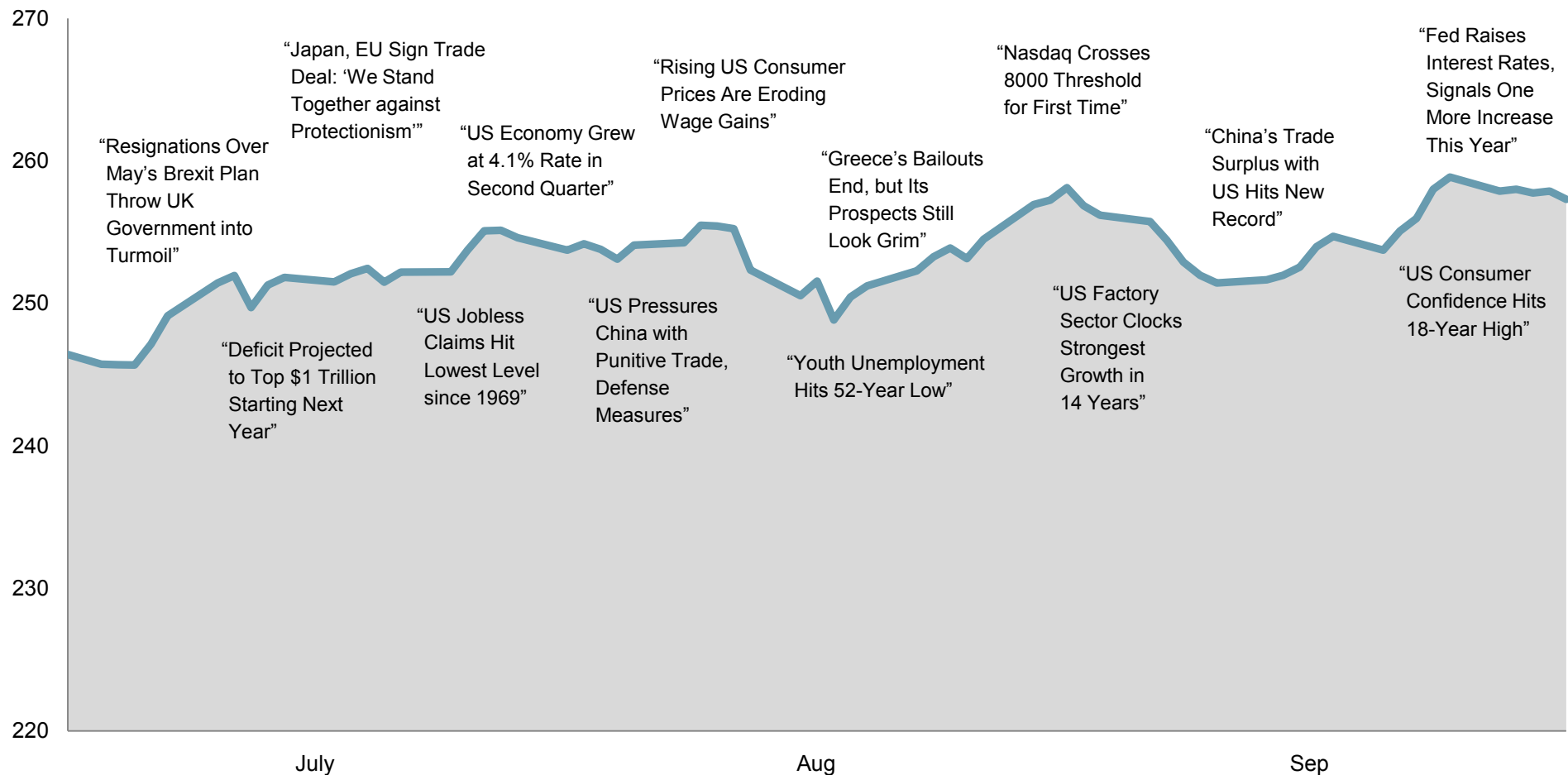
## Index Returns

	US Stock Market	International Developed Stocks	Emerging Markets Stocks	Global Real Estate	US Bond Market	Global Bond Market ex US
<b>Q3 2018</b>	<b>STOCKS</b>				<b>BONDS</b>	
	7.12%	1.31%	-1.09%	-0.03%	0.02%	-0.17%
						
<b>Since Jan. 2001</b>						
Avg. Quarterly Return	2.0%	1.5%	2.9%	2.6%	1.1%	1.1%
Best Quarter	16.8%	25.9%	34.7%	32.3%	4.6%	4.6%
	2009 Q2	2009 Q2	2009 Q2	2009 Q3	2001 Q3	2008 Q4
Worst Quarter	-22.8%	-21.2%	-27.6%	-36.1%	-3.0%	-2.7%
	2008 Q4	2008 Q4	2008 Q4	2008 Q4	2016 Q4	2015 Q2

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: US Stock Market (Russell 3000 Index), International Developed Stocks (MSCI World ex USA Index [net div.]), Emerging Markets (MSCI Emerging Markets Index [net div.]), Global Real Estate (S&P Global REIT Index [net div.]), US Bond Market (Bloomberg Barclays US Aggregate Bond Index), and Global Bond Market ex US (Bloomberg Barclays Global Aggregate ex-USD Bond Index [hedged to USD]). S&P data © 2018 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2018, all rights reserved. Bloomberg Barclays data provided by Bloomberg. FTSE fixed income © 2018 FTSE Fixed Income LLC, all rights reserved.

# World Stock Market Performance

MSCI All Country World Index with selected headlines from Q3 2018



These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.

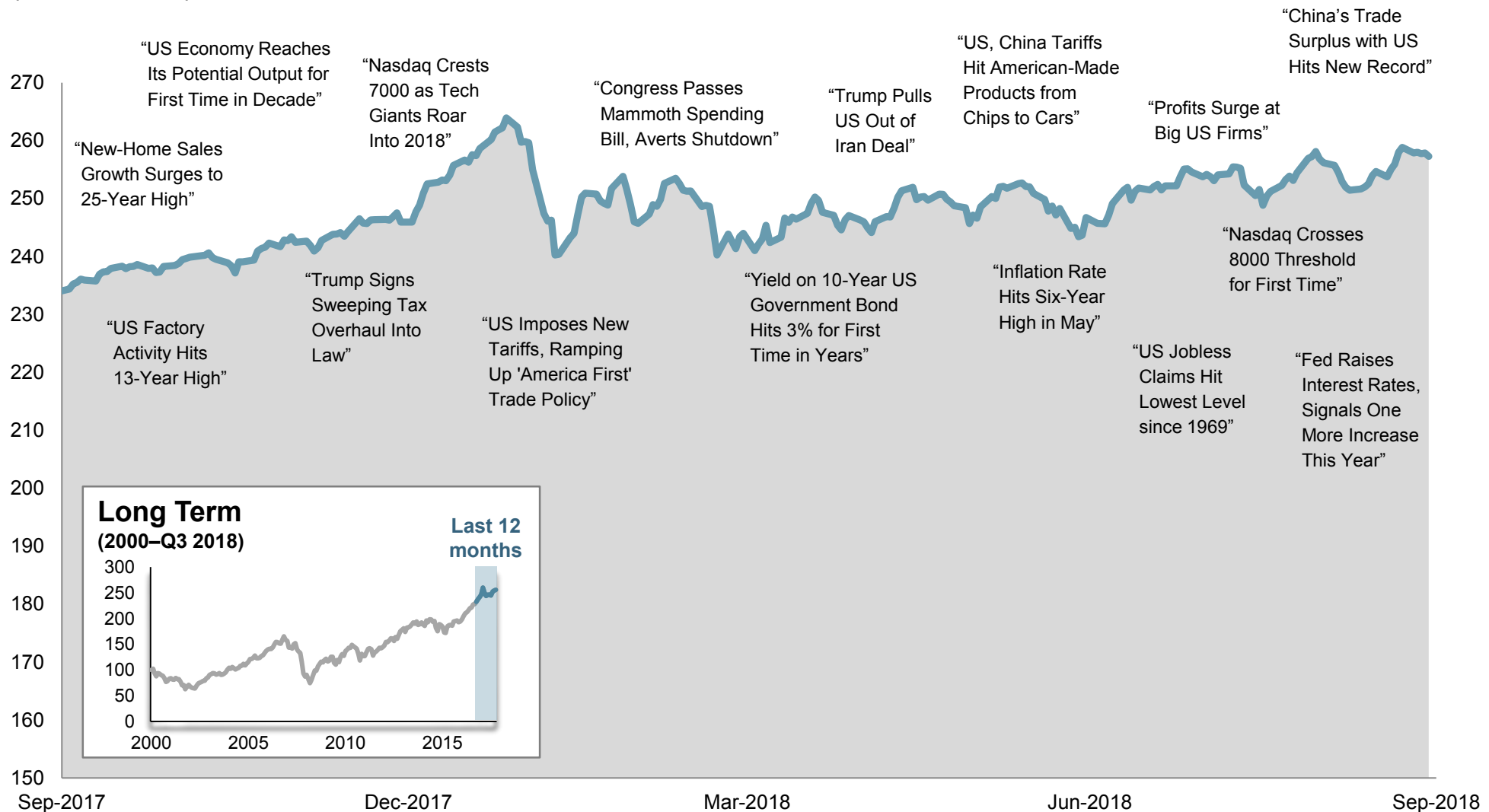
Graph Source: MSCI ACWI Index [net div.], MSCI data © MSCI 2018, all rights reserved.

It is not possible to invest directly in an index. Performance does not reflect the expenses associated with management of an actual portfolio. Past performance is not a guarantee of future results.

# World Stock Market Performance

MSCI All Country World Index with selected headlines from past 12 months

## Short Term (Q4 2017–Q3 2018)



These headlines are not offered to explain market returns. Instead, they serve as a reminder that investors should view daily events from a long-term perspective and avoid making investment decisions based solely on the news.

Graph Source: MSCI ACWI Index [net div.]. MSCI data © MSCI 2018, all rights reserved.

It is not possible to invest directly in an index. Performance does not reflect the expenses associated with management of an actual portfolio. **Past performance is not a guarantee of future results.**

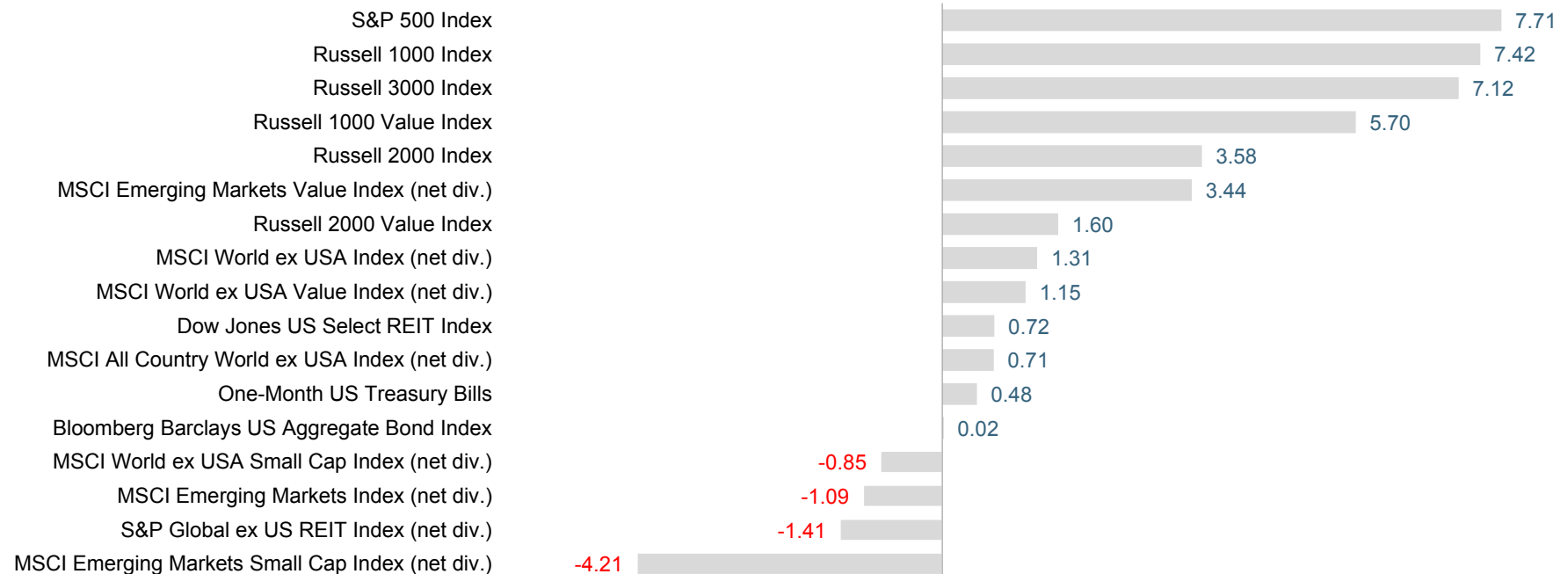
# World Asset Classes

## Third Quarter 2018 Index Returns (%)

Looking at broad market indices, the US outperformed non-US developed and emerging markets during the quarter.

Small caps underperformed large caps in the US, non-US developed, and emerging markets. The value effect was positive in emerging markets but negative in the US and non-US developed markets.

REIT indices underperformed equity market indices in both the US and non-US developed markets.



# US Stocks

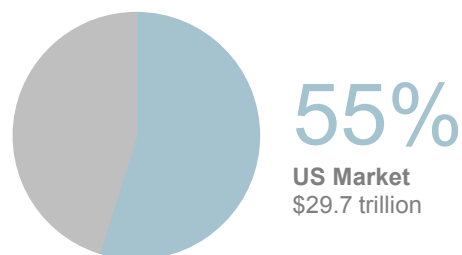
## Third Quarter 2018 Index Returns

The US equity market posted a positive return, outperforming both non-US developed and emerging markets.

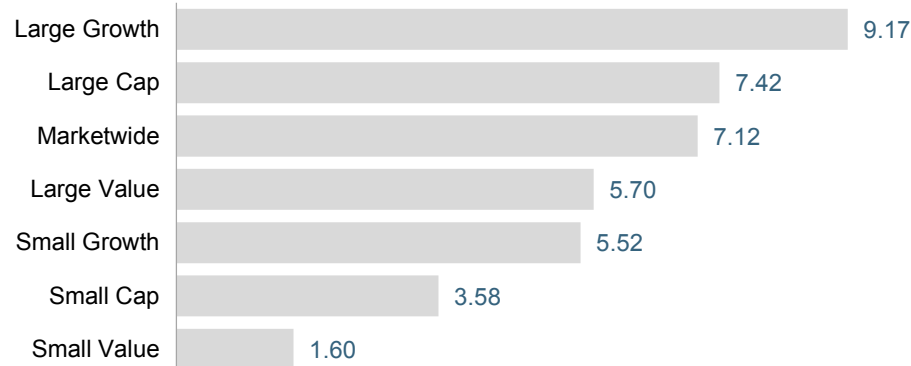
Value underperformed growth in the US across large and small cap stocks.

Small caps underperformed large caps in the US.

### World Market Capitalization—US



### Ranked Returns for the Quarter (%)



### Period Returns (%)

Asset Class	* Annualized				
	YTD	1 Year	3 Years*	5 Years*	10 Years*
Large Growth	17.09	26.30	20.55	16.58	14.31
Small Growth	15.76	21.06	17.98	12.14	12.65
Small Cap	11.51	15.24	17.12	11.07	11.11
Marketwide	10.57	17.58	17.07	13.46	12.01
Large Cap	10.49	17.76	17.07	13.67	12.09
Small Value	7.14	9.33	16.12	9.91	9.52
Large Value	3.92	9.45	13.55	10.72	9.79

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Market segment (index representation) as follows: Marketwide (Russell 3000 Index), Large Cap (Russell 1000 Index), Large Cap Value (Russell 1000 Value Index), Large Cap Growth (Russell 1000 Growth Index), Small Cap (Russell 2000 Index), Small Cap Value (Russell 2000 Value Index), and Small Cap Growth (Russell 2000 Growth Index). World Market Cap represented by Russell 3000 Index, MSCI World ex USA IMI Index, and MSCI Emerging Markets IMI Index. Russell 3000 Index is used as the proxy for the US market. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2018, all rights reserved.

# International Developed Stocks

## Third Quarter 2018 Index Returns

In US dollar terms, developed markets outside the US underperformed the US but outperformed emerging markets during the quarter.

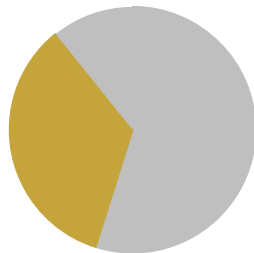
Large cap value stocks underperformed large cap growth stocks in non-US developed markets; however, small cap value outperformed small cap growth.

Small caps underperformed large caps in non-US developed markets.

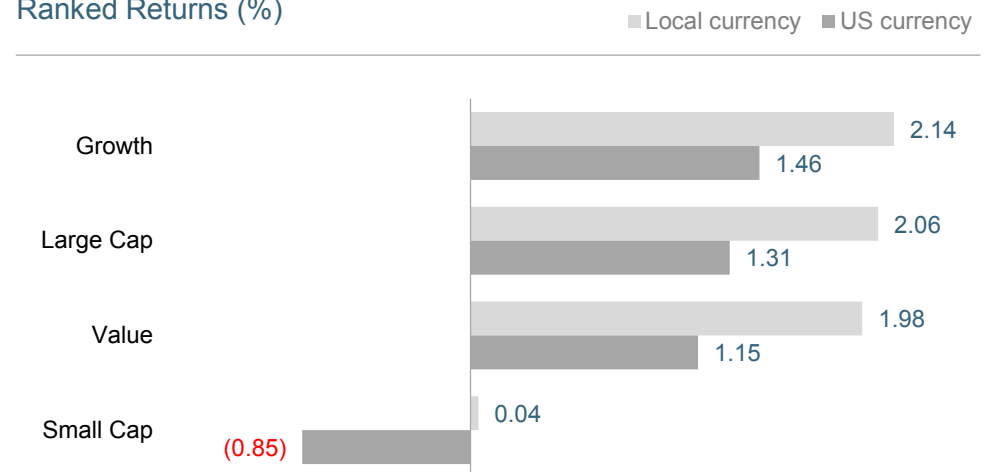
### World Market Capitalization—International Developed

**34%**

International  
Developed  
Market  
\$18.6 trillion



### Ranked Returns (%)



### Period Returns (%)

Asset Class	YTD	1 Year	3 Years*	5 Years*	10 Years*
					* Annualized
Growth	0.39	5.47	9.91	5.37	5.78
Large Cap	-1.50	2.67	9.32	4.24	5.18
Small Cap	-2.28	3.42	12.23	7.07	9.04
Value	-3.43	-0.13	8.65	3.05	4.51

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# Emerging Markets Stocks

## Third Quarter 2018 Index Returns

In US dollar terms, emerging markets posted negative returns for the quarter, underperforming developed markets including the US.

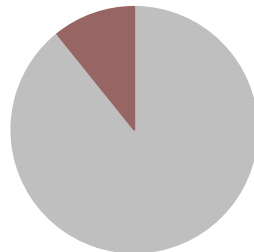
The value effect was positive, particularly in large caps in emerging markets.

Small caps underperformed large caps.

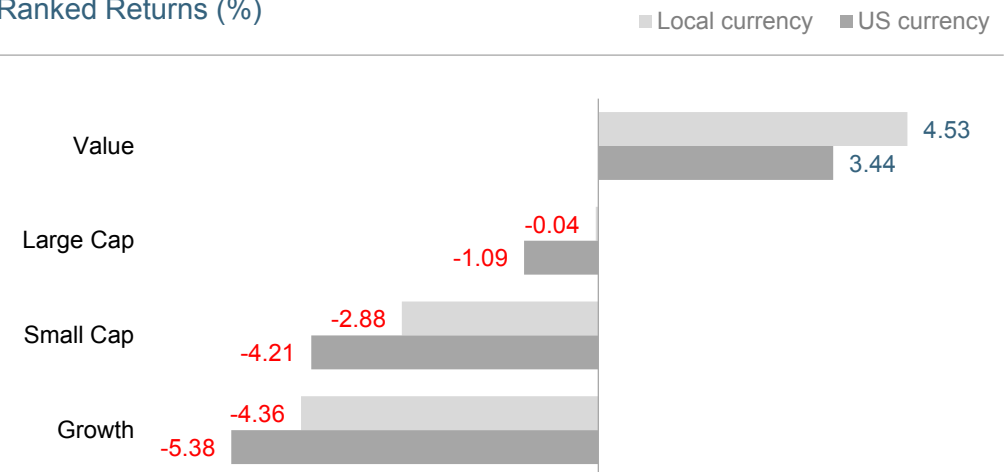
### World Market Capitalization—Emerging Markets

11%

Emerging Markets  
\$5.8 trillion



### Ranked Returns (%)



### Period Returns (%)

Asset Class	YTD	1 Year	3 Years*	5 Years*	10 Years*
					* Annualized
Value	-4.28	2.27	11.55	2.04	4.53
Large Cap	-7.68	-0.81	12.36	3.61	5.40
Growth	-10.94	-3.89	13.03	5.08	6.18
Small Cap	-12.30	-4.20	7.43	2.72	7.43

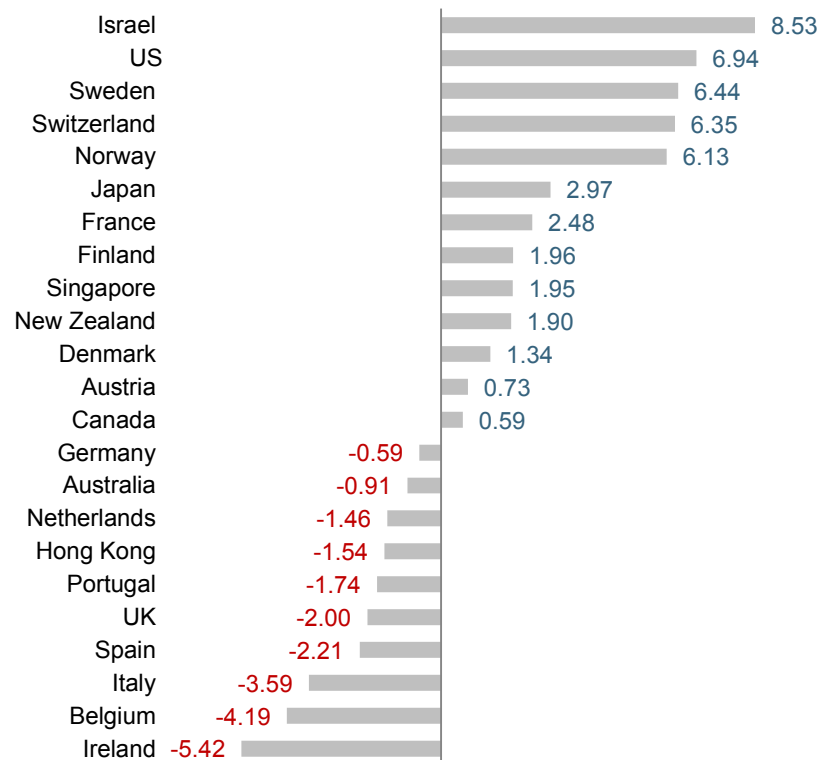
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# Select Country Performance

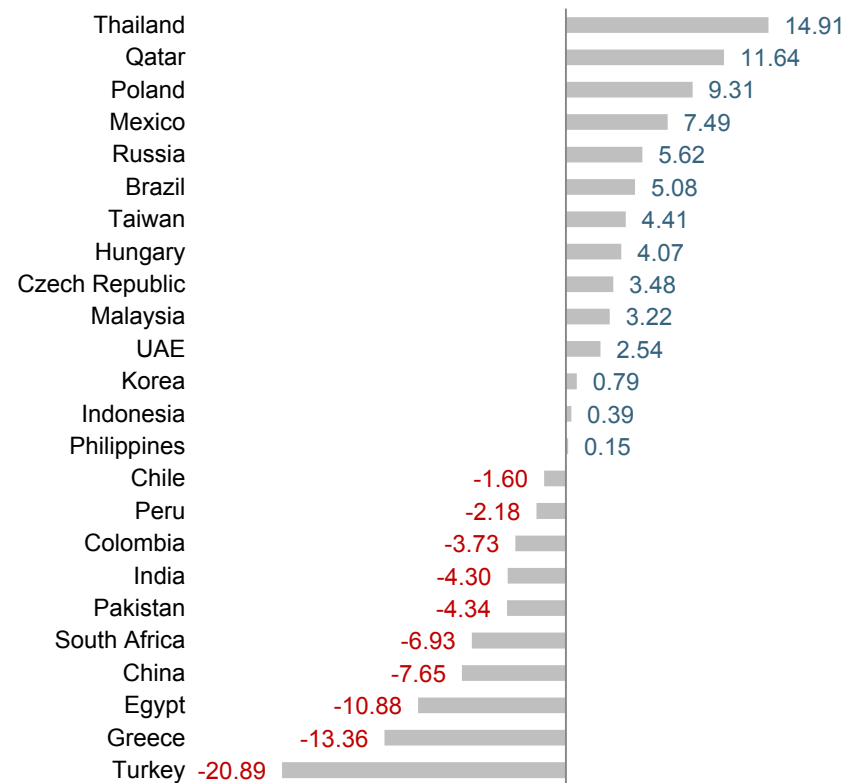
## Third Quarter 2018 Index Returns

In US dollar terms, Israel, the US, and Sweden recorded the highest country performance in developed markets, while Ireland and Belgium posted the lowest returns for the quarter. In emerging markets, Thailand and Qatar recorded the highest country performance, while Turkey, Greece, Egypt, and China posted the lowest performance.

### Ranked Developed Markets Returns (%)



### Ranked Emerging Markets Returns (%)

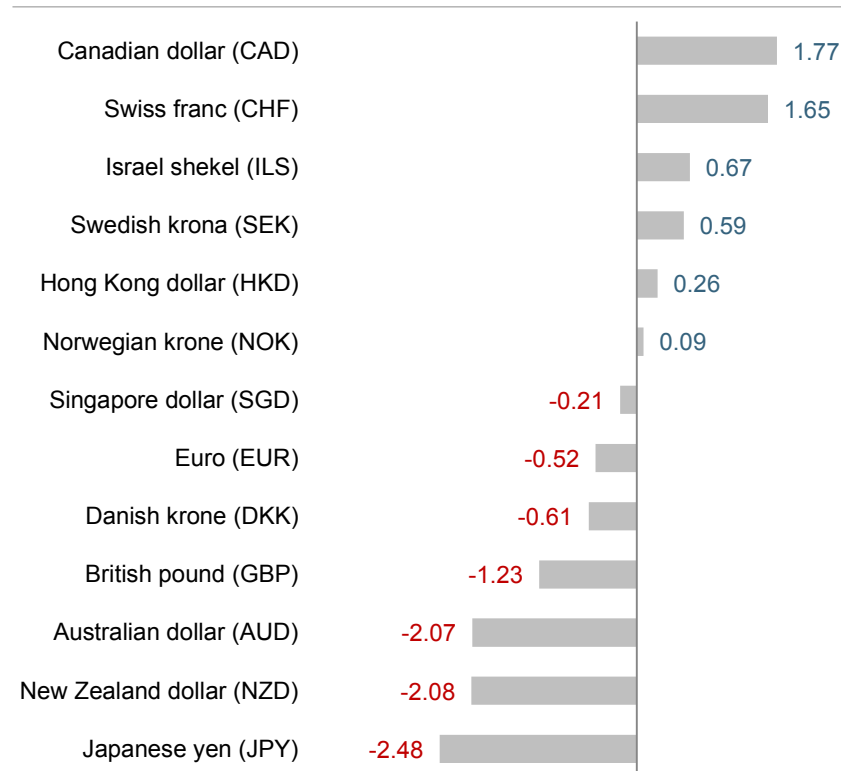


# Select Currency Performance vs. US Dollar

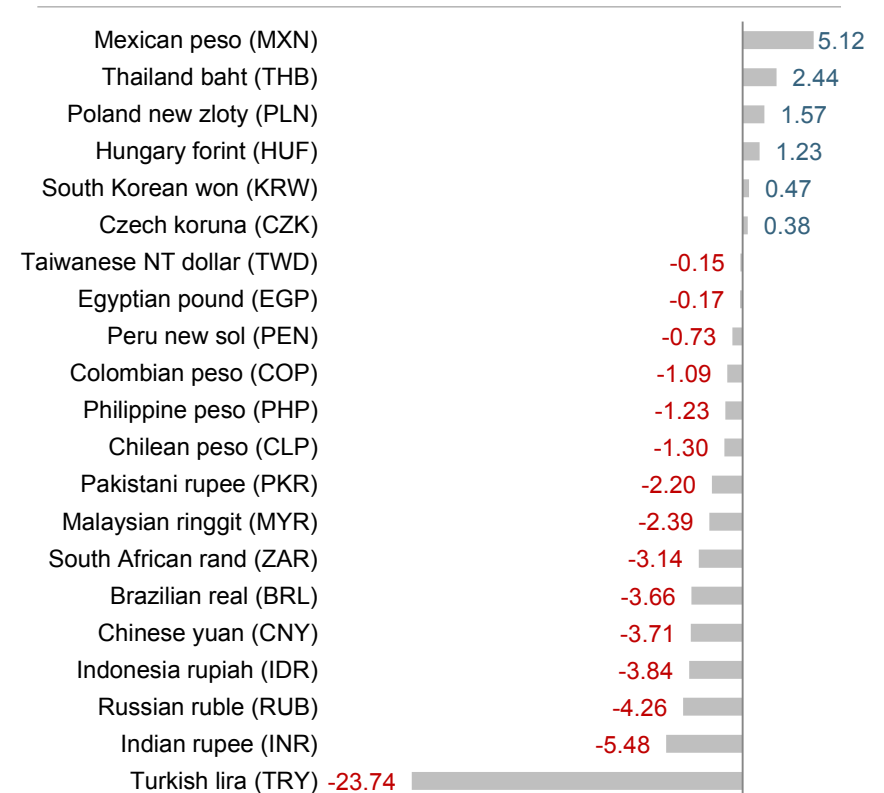
Third Quarter 2018

In developed markets, currencies recorded mixed results vs. the US dollar. The Canadian dollar and the Swiss franc appreciated over 1.5% vs. the US dollar, but the Japanese yen and Australian and New Zealand dollars all each depreciated more than 2%. In emerging markets, most currencies depreciated against the US dollar. The Turkish lira fell over 20%, but the Mexican Peso appreciated more than 5%.

## Ranked Developed Markets (%)



## Ranked Emerging Markets (%)

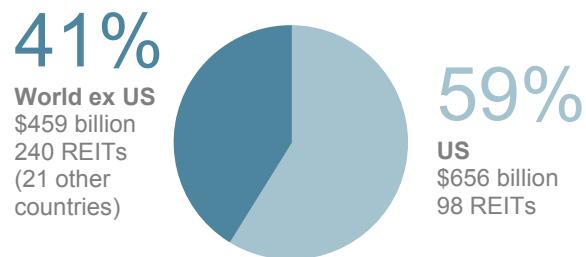


# Real Estate Investment Trusts (REITs)

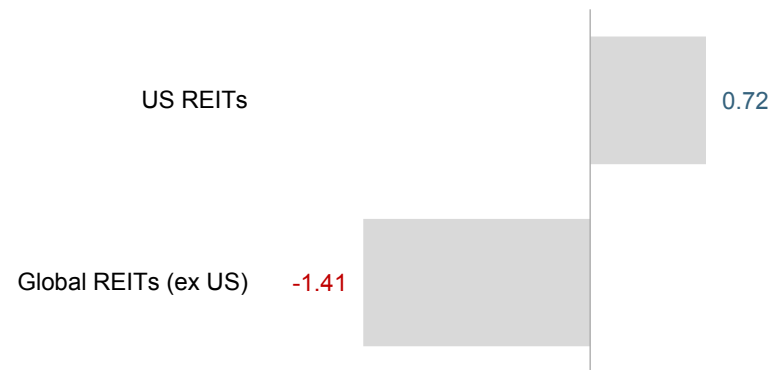
## Third Quarter 2018 Index Returns

US real estate investment trusts outperformed non-US REITs in US dollar terms.

### Total Value of REIT Stocks



### Ranked Returns (%)



### Period Returns (%)

Asset Class	* Annualized				
	YTD	1 Year	3 Years*	5 Years*	10 Years*
Dow Jones US Select REIT Index	2.56	4.59	6.88	9.14	7.21
S&P Global ex US REIT Index (net div.)	-2.88	3.39	5.66	4.18	5.40

Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Number of REIT stocks and total value based on the two indices. All index returns are net of withholding tax on dividends. Total value of REIT stocks represented by Dow Jones US Select REIT Index and the S&P Global ex US REIT Index. Dow Jones US Select REIT Index used as proxy for the US market, and S&P Global ex US REIT Index used as proxy for the World ex US market. Dow Jones data © 2018 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. S&P data © 2018 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved.

# Commodities

## Third Quarter 2018 Index Returns

The Bloomberg Commodity Index Total Return declined 2.02% in the third quarter.

The energy complex led performance. Heating oil gained 5.63%, and Brent oil returned 5.21%.

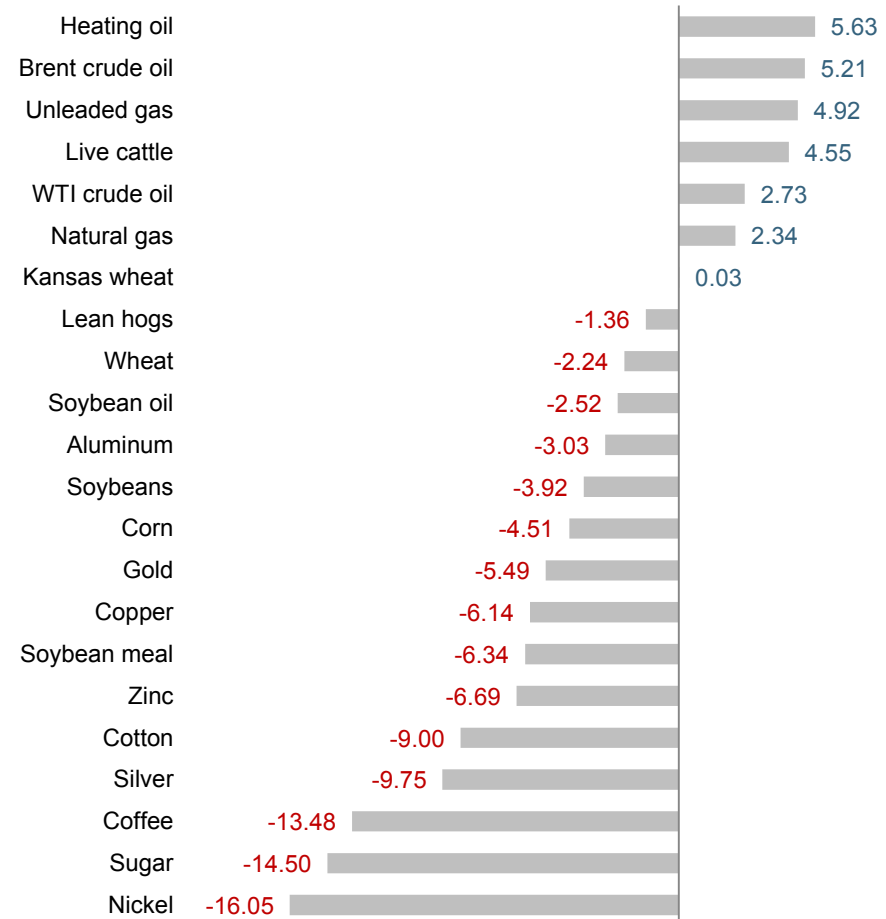
Nickel, the worst-performing commodity, declined 16.05%. Sugar lost 14.50%, and coffee fell 13.48%.

### Period Returns (%)

\* Annualized

Asset Class	QTR	YTD	1 Year	3 Years*	5 Years*	10 Years*
Commodities	-2.02	-2.03	2.59	-0.11	-7.18	-6.24

### Ranked Returns for Individual Commodities (%)



# Fixed Income

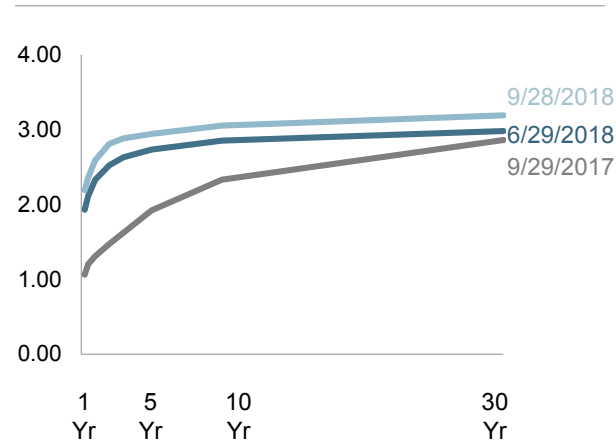
## Third Quarter 2018 Index Returns

Interest rates increased in the US during the third quarter. The yield on the 5-year Treasury note rose 21 basis points (bps), ending at 2.94%. The yield on the 10-year Treasury note increased 20 bps to 3.05%. The 30-year Treasury bond yield rose 21 bps to 3.19%.

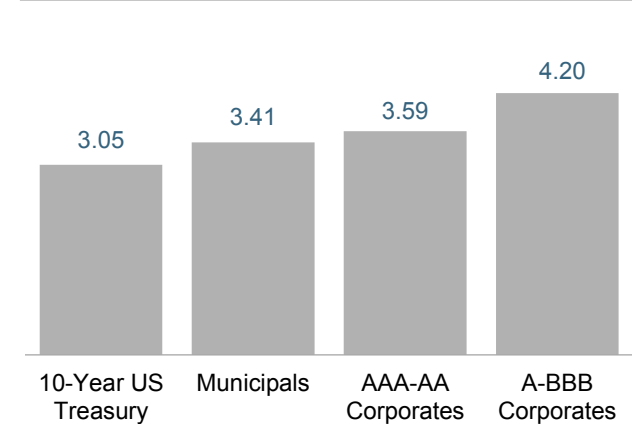
On the short end of the yield curve, the 1-month Treasury bill yield increased 35 bps to 2.12%, while the 1-year Treasury bill yield rose 26 bps to 2.59%. The 2-year Treasury note yield finished at 2.81% after an increase of 29 bps.

In terms of total return, short-term corporate bonds gained 0.71%, while intermediate-term corporates returned 0.80%. Short-term municipal bonds declined 0.11%, while intermediate-term munis dipped 0.06%. Revenue bonds (-0.16%) performed in line with general obligation bonds (-0.14%).

US Treasury Yield Curve (%)



Bond Yields across Issuers (%)



Period Returns (%)

Asset Class	*Annualized					
	QTR	YTD	1 Year	3 Years*	5 Years*	10 Years*
Bloomberg Barclays US High Yield Corporate Bond Index	2.40	2.57	3.05	8.15	5.54	9.46
ICE BofAML US 3-Month Treasury Bill Index	0.49	1.30	1.59	0.84	0.52	0.34
ICE BofAML 1-Year US Treasury Note Index	0.41	1.07	1.08	0.74	0.55	0.71
FTSE World Government Bond Index 1-5 Years (hedged to USD)	0.17	0.58	0.64	1.04	1.26	1.90
Bloomberg Barclays US Aggregate Bond Index	0.02	-1.60	-1.22	1.31	2.16	3.77
Bloomberg Barclays Municipal Bond Index	-0.15	-0.40	0.35	2.24	3.54	4.75
FTSE World Government Bond Index 1-5 Years	-0.63	-1.68	-1.39	0.84	-1.16	0.88
Bloomberg Barclays US TIPS Index	-0.82	-0.84	0.41	2.04	1.37	3.32
Bloomberg Barclays US Government Bond Index Long	-2.82	-5.71	-3.50	0.78	4.41	5.45

One basis point equals 0.01%. Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Yield curve data from Federal Reserve. State and local bonds are from the S&P National AMT-Free Municipal Bond Index. AAA-AA Corporates represent the Bank of America Merrill Lynch US Corporates, AA-AAA rated. A-BBB Corporates represent the Bank of America Merrill Lynch US Corporates, BBB-A rated. Bloomberg Barclays data provided by Bloomberg. US long-term bonds, bills, inflation, and fixed income factor data © Stocks, Bonds, Bills, and Inflation (SBBBI) Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld). FTSE fixed income indices © 2018 FTSE Fixed Income LLC, all rights reserved. ICE BofAML index data © 2018 ICE Data Indices, LLC.

# Impact of Diversification

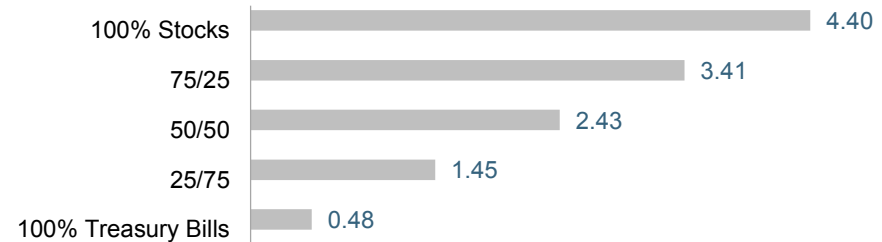
## Third Quarter 2018 Index Returns

These portfolios illustrate the performance of different global stock/bond mixes and highlight the benefits of diversification. Mixes with larger allocations to stocks are considered riskier but have higher expected returns over time.

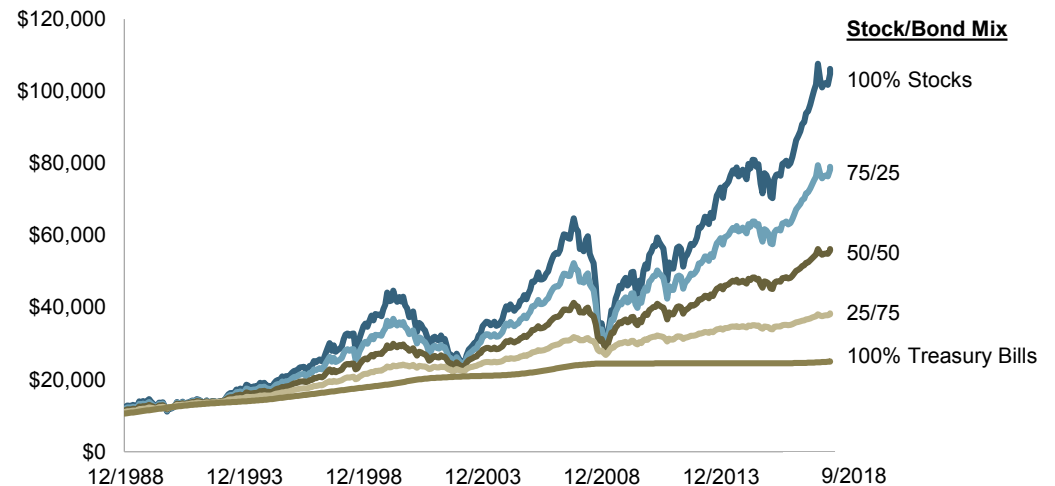
### Period Returns (%)

Asset Class	YTD	1 Year	3 Years*	5 Years*	10 Years*	* Annualized
						10-Year STDEV
100% Stocks	4.26	10.35	14.02	9.25	8.77	15.83
75/25	3.56	8.14	10.64	7.08	6.85	11.87
50/50	2.82	5.93	7.31	4.89	4.78	7.91
25/75	2.05	3.71	4.01	2.68	2.58	3.95
100% Treasury Bills	1.24	1.50	0.75	0.45	0.27	0.14

### Ranked Returns (%)



### Growth of Wealth: The Relationship between Risk and Return



1. STDEV (standard deviation) is a measure of the variation or dispersion of a set of data points. Standard deviations are often used to quantify the historical return volatility of a security or portfolio. Diversification does not eliminate the risk of market loss. **Past performance is not a guarantee of future results. Indices are not available for direct investment. Index performance does not reflect expenses associated with the management of an actual portfolio.** Asset allocations and the hypothetical index portfolio returns are for illustrative purposes only and do not represent actual performance. Global Stocks represented by MSCI All Country World Index (gross div.) and Treasury Bills represented by US One-Month Treasury Bills. Globally diversified allocations rebalanced monthly, no withdrawals. Data © MSCI 2018, all rights reserved. Treasury bills © Stocks, Bonds, Bills, and Inflation Yearbook™, Ibbotson Associates, Chicago (annually updated work by Roger G. Ibbotson and Rex A. Sinquefeld).

# Total Cost of Ownership

Third Quarter 2018

Costs matter. Whether you're buying a car or selecting an investment strategy, the costs you expect to pay are likely to be an important factor in making any major financial decision.

People rely on a lot of different information about costs to help inform these decisions. When you buy a car, for example, the sticker price indicates approximately how much you can expect to pay for the car itself. But the costs of car ownership do not end there. Taxes, insurance, fuel, routine maintenance, and unexpected repairs are also important considerations in the overall cost of a car. Some of these costs are easily observed, while others are more difficult to assess. Similarly, when investing in mutual funds, different variables need to be considered to evaluate how cost-effective a strategy may be for a particular investor.

## EXPENSE RATIOS

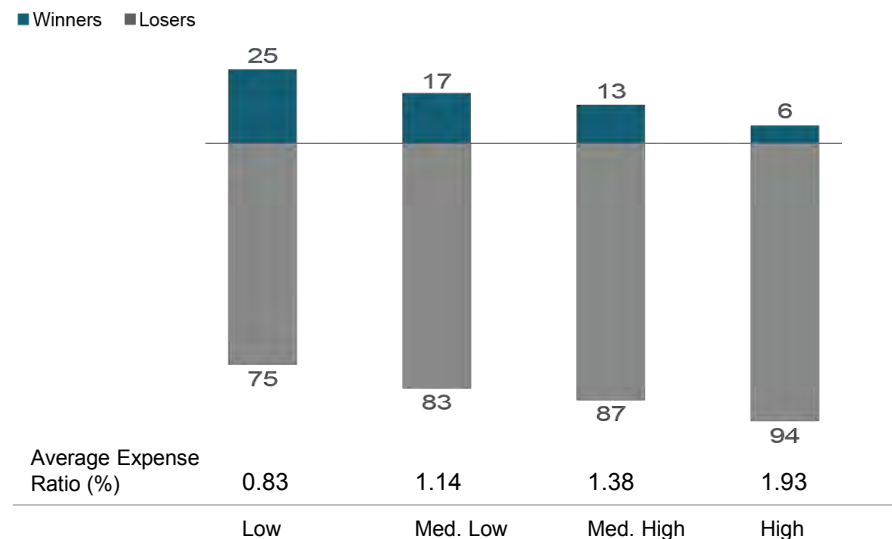
Mutual funds have many costs, all of which affect the net return to investors. One easily observable cost is the expense ratio. Like the sticker price of a car, the expense ratio tells you a lot about what you can expect to pay for an investment strategy. Expense ratios strongly influence fund selection for many investors, and it's easy to see why.

**Exhibit 1** illustrates the outperformance rate, or the percentage of funds that beat their category index, for active equity mutual funds over the 15-year period ending December 31, 2017. To see the link between expense ratio and performance, outperformance rates are shown for quartiles of funds sorted by their expense ratio. As the chart shows, while active funds have mostly lagged indices across the board, the outperformance rate has been inversely related to expense ratio. Just 6% of funds in the highest expense ratio quartile beat their index, compared to 25% for the lowest expense ratio group.

This data indicates that a high expense ratio presents a challenging hurdle for funds to overcome, especially over longer time horizons. From the investor's point of view, an expense ratio of 0.25% vs. 1.25% means savings of \$10,000

per year on every \$1 million invested. As **Exhibit 2** helps to illustrate, those dollars can really add up over time.

Exhibit 1. High Costs Can Reduce Performance, Equity Fund Winners and Losers Based on Expense Ratios (%)



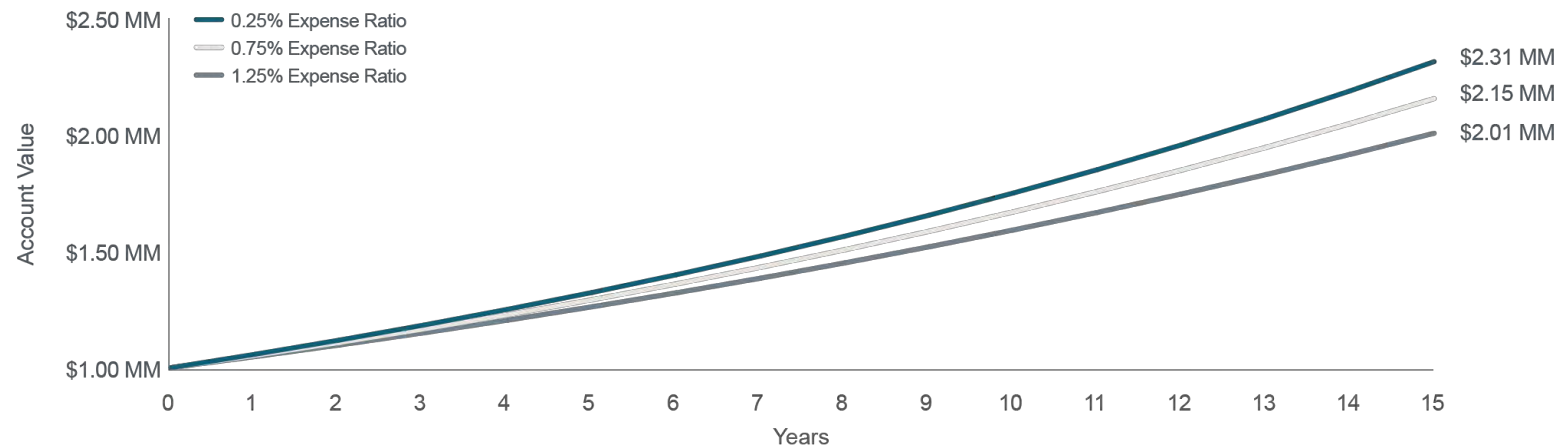
The sample includes funds at the beginning of the 15-year period ending December 31, 2017. Funds are sorted into quartiles within their category based on average expense ratio over the sample period. The chart shows the percentage of winner and loser funds by expense ratio quartile; winners are funds that survived and outperformed their respective Morningstar category benchmark, and losers are funds that either did not survive or did not outperform their respective Morningstar category benchmark. US-domiciled open-end mutual fund data is from Morningstar and Center for Research in Security Prices (CRSP) from the University of Chicago. Equity fund sample includes the Morningstar historical categories: Diversified Emerging Markets, Europe Stock, Foreign Large Blend, Foreign Large Growth, Foreign Large Value, Foreign Small/Mid Blend, Foreign Small/Mid Growth, Foreign Small/Mid Value, Japan Stock, Large Blend, Large Growth, Large Value, Mid-Cap Blend, Mid-Cap Value, Miscellaneous Region, Pacific/Asia ex-Japan Stock, Small Blend, Small Growth, Small Value, and World Stock. For additional information regarding the Morningstar historical categories, please see "The Morningstar Category Classifications" at [morningstardirect.morningstar.com/clientcomm/Morningstar\\_Categories\\_US\\_April\\_2016.pdf](http://morningstardirect.morningstar.com/clientcomm/Morningstar_Categories_US_April_2016.pdf). Index funds and fund-of-funds are excluded from the sample. The return, expense ratio, and turnover for funds with multiple share classes are taken as the asset-weighted average of the individual share class observations. For additional methodology, please refer to Dimensional Fund Advisors' brochure, Mutual Fund Landscape 2018. Past performance is no guarantee of future results.



# Total Cost of Ownership

(continued from page 16)

Exhibit 2. Hypothetical Growth of \$1 Million at 6%, Less Expenses



*For illustrative purposes only and not representative of an actual investment. This hypothetical illustration is intended to show the potential impact of higher expense ratios and does not represent any investor's actual experience. Assumes a starting account balance of \$1 million and a 6% compound annual growth rate less expense ratios of 0.25%, 0.75%, and 1.25% applied over a 15-year time horizon. Performance of a hypothetical investment does not reflect transaction costs, taxes, other potential costs, or returns that any investor would have actually attained and may not reflect the true costs, including management fees of an actual portfolio. Actual results may vary significantly. Changing the assumptions would result in different outcomes. For example, the savings and difference between the ending account balances would be lower if the starting investment amount were lower.*

## GOING BEYOND THE EXPENSE RATIO

The poor track record of mutual funds with high expense ratios has led many investors to select mutual funds based on expense ratio alone. However, as with a car's sticker price, an expense ratio is not an all-encompassing measure of the cost of ownership. Take, for example, index funds, which often rank near the bottom of their peers on expense ratio.

Index funds are designed to track or match the components of an index formed by an index provider, such as Russell or MSCI. Important decisions in the investment process, such as which securities to include in the index, are outsourced to an index provider and are not within the fund manager's

discretion. For example, the prescribed reconstitution schedule for an index, which is the process of deleting or adding certain stocks to the index, may cause index funds to buy stocks when buy demand is high and sell stocks when buy demand is low. This price-insensitive buying and selling may be required so that the index fund can stay true to its investment mandate of tracking an underlying index. This can result in suboptimal transaction prices for the index fund and diminished overall returns. In other words, for a given amount of trading (or turnover), the cost per unit of trading may be higher for such a strictly regimented approach to investing. Moreover, this cost will not appear explicitly to investors assessing such a fund on expense ratio alone. Further, because indices are reconstituted infrequently (typically once per year), funds seeking to

# Total Cost of Ownership

(continued from page 17)

track them may also be forced to buy and sell holdings based on stale eligibility criteria. For example, the characteristics of a stock considered a value stock<sup>1</sup> as of the last reconstitution date may change over time, but between reconstitution dates, those changes would not affect that stock's inclusion or weighting in a value index. That means incoming cash flows to a value index fund could actually be used to purchase stocks that currently look more like growth stocks<sup>2</sup> and vice versa. Metaphorically, these managers' attention may be more focused on the rear-view mirror than on the road ahead for investors.

For active approaches like stock picking, both the total amount of trading and the cost per trade may be high. If a manager trades excessively or inefficiently, costs like commissions and price impact from trading can eat away at returns. Viewed through the lens of our car analogy, this impact is like the toll on your vehicle from incessantly jamming the brakes or accelerating quickly. Subjecting the car to such treatment may result in added wear and tear and greater fuel consumption, increasing your total cost of ownership. Similarly, excessive trading can lead to negative tax consequences for a fund, which can increase the cost of ownership for investors holding funds in taxable accounts. Such trading costs can be reduced by avoiding unnecessary turnover and seeking to minimize the cost per trade.

In contrast to both highly regimented indexing and high-turnover active strategies, employing a flexible investment approach that reduces the need for immediacy, and thus enables opportunistic execution, is one way to potentially reduce implicit costs. Keeping turnover low, remaining flexible, and transacting only when the potential benefits of a trade outweigh the costs can help keep overall trading costs down and help reduce the total cost of ownership.

## CONCLUSION

The total cost of ownership of a mutual fund can be difficult to assess and requires a thorough understanding of costs beyond what an expense ratio can tell investors on its own. We believe investors should look beyond any one cost metric and instead evaluate the total cost of ownership of an investment solution.

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1. A stock trading at a low price relative to a measure of fundamental value, such as book value or earnings.  
2. A stock trading at a high price relative to a measure of fundamental value, such as book value or earnings.

Source: Dimensional Fund Advisors LP.

There is no guarantee investment strategies will be successful. Diversification does not eliminate the risk of market loss. Mutual fund investment values will fluctuate and shares, when redeemed, may be worth more or less than original cost. The types of fees and expenses will vary based on investment vehicle. Investments are subject to risk including possible loss of principal.

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